The data suggests that the polyolefin molding compositions prepared in accordance with the claimed process are characterized by a relatively narrow molecular weight distribution M_w/M_n. EP 0 310 734, which was cited by the Examiner, confirms that a narrow molecular weight distribution for polymers prepared by use of metallocene catalyst systems is generally within the range of 2–4 (page 2, lines 41–44). Several of the polyolefin products of Examples 6–16 of the present application have a narrow molecular weight distribution which satisfies the range M_w/M_n is ≤ 3. Thus, the hypothetical person of ordinary skill in the art would view the range of new claim 16 as within Applicants' invention. It is submitted, therefore, that the embodiment defined by new claim 16 is sufficiently described in the specification and does not convey new information.

Accordingly, no new matter has been added by the amendments to claims 7, 8, 12 and 15 or by new claim 16.

B. The Claimed Invention

The present invention is directed to a process for preparing a polyolefin molding composition that is characterized by a narrow molecular weight distribution M_w/M_n and the following specific melt behavior:

(i) a broad, bimodal or multimodal melting range in the DSC spectrum;

(ii) where the melting range maximum is between 120 and 165°C;

(iii) the half-intensity width of the melting peak is broader than 10°C; and

(iv) the width determined at quarter peak height is greater than 15° C.

The claimed process itself is characterized by the polymerization or copolymerization of at least two polyolefins by use of at least two different

metallocenes. The melting points of the two polyolefin components must differ by at least 5°C.

Surprisingly, Applicants have discovered that a mixture of at least two different metallocenes, each of which gives polyolefins having different melting points, gives a polyolefin mixture which does not, as expected, have a mixed melting point or a melting point below the melting point of the lower melting component, but instead gives a polymer product which has two melting points (Specification, page 1, line 27, to page 2, line 4).

C. Response to the Office Action

Claim 12 is rejected under 35 U.S.C. §112, first and second paragraphs, for failing to recite the catalyst employed and the polymerization conditions. Claim 12 has been amended to recite the metallocene catalyst system and polymerization conditions of claim 6, which has been canceled. Accordingly, withdrawal of the rejection of claim 12 under 35 U.S.C. §112, first and second paragraphs, is respectfully requested.

Claim 12 is rejected under 35 U.S.C. §102(e) as anticipated by or, in the alternative, under 35 U.S.C. §103 as obvious over U.S. Patent Nos. 5,280,074 and 5,322,902 to Schreck et al. Amended claim 12 now recites a catalyst system comprising at least two different metallocenes. The processes of Schreck et al. '074 and '902 require the use of only one metallocene compound. There is no disclosure or suggestion that two or more different metallocene catalysts can be used.

Accordingly, withdrawal of the rejection of claim 12 under 35 U.S.C. §102(e) or, in the alternative, under 35 U.S.C. §103 is respectfully requested.

Claims 6–8, 12 and 15 are rejected under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103 as obvious over EP 0 310 734. EP '734 is directed to a catalyst system of at least two different metallocenes for use in the preparation of polyolefins having a broad molecular weight distribution. In Table 1 of EP '734, the molecular weight distribution M_w/M_n of Examples 1–7 is within the range 3.7–10.3.

A rejection under 35 U.S.C. §102(b) is proper when each and every limitation of the claimed invention is found within the four corners of the reference. Firstly, the claimed invention is directed to a process for making a polyolefin molding composition having a broad, bimodal or multimodal melting range in the DSC spectrum. As discussed in the specification at page 1, lines 11–15, these compositions are especially suitable for many applications, e.g., thermoforming, blow molding, extrusion, injection stretch blow molding and certain film applications. EP '734 is directed to a process for producing reactor blend polyolefins by using at least two different metallocene catalysts. However, EP '734 does not disclose that the process may be suitable for the preparation of polyolefin molding compositions.

Secondly, it has long been known in the art that a mixture of at least two metallocenes gives polyolefins having different melting points (Specification, page 1, lines 30–32). Thus, the Examiner's inherency argument regarding the probable difference in melting points of the polymer components of the polyolefin products of EP '734 is moot. However, EP '734 neither expressly nor inherently teaches that the difference between melting points of the polymer components *must be* at least 5°C.

As to this point, the Examiner notes in Table 1 of EP '734 wherein the product of Example B (Hf containing catalyst) has a melting point of 143°C and the products of Examples C and D (Zr containing catalyst) have a melting point of 137°C and 138°C. However, it is equally as important to note that the difference in melting points of the products of Example A (134°C:Hf containing catalyst) and those of Examples C and D (137°C & 138°C:Zr containing catalyst) is less than 5°C. Thus, EP '734 does not provide any meaningful teaching that the difference in melting points of the polymer components *must be* at least 5°C in order to obtain a molding composition that exhibits a broad, bimodal or multimodal melting range in the DSC spectrum and which is suitable for the intended molding applications.

Furthermore, Applicants have discovered that the polymer product of a mixture of at least two metallocenes does not, as expected, have a mixed melting point or a melting point below the melting point of the lower melting component. Instead, it is Applicants' discovery that such mixtures produce a polyolefin molding composition having two melting points. The melting points of the polymer products of EP '734 were derived from DSC data but only one, the DSC peak temperature, is given in Table 1. There is no suggestion that the DSC measurements picked up a broad, bimodal or multimodal melting range. Moreover, the polymer products of Examples 4-7 of EP '734 have a peak melting point below the peak melting point of the lower melting component.

Thirdly, the polymer products of EP '734 have a broad molecular weight distribution M_w/M_n. Although claim 25 of EP '734 recites that the polyolefin products of that process have a $M_w/M_n > 3$, the molecular weight distribution of Examples 1-7, as shown in Table 1, is much higher: $M_w/M_n = 3.7-10.3$.

Conversely, the claimed process produces a polyolefin molding composition with a relatively narrow molecular weight distribution M_w/M_n. New claim 16 has been added to recite a specific embodiment wherein M_w/M_n is ≤ 3.

For the above reasons, it is clear that EP '734 does not disclose each and every feature of the claimed invention. Accordingly, withdrawal of the rejection of claims 6–8, 12 and 15 under 35 U.S.C. §102(b) is respectfully requested.

With regard to the §103 rejection of claims 6–8, 12 and 15 as being unpatentable over EP '734, Applicants repeat that there is no suggestion that the process of EP '734 is suitable for the preparation of a polyolefin molding composition. Furthermore, EP '734 offers no suggestion that the difference between the respective melting points of the polymer components *must be* at least 5°C. Table I of EP '734 suggests that the difference between the melting points of the polymer components can be less than 5°C. The DSC data of EP '734 does not suggest that the polyolefin products of EP '734 are characterized by a broad, bimodal or multimodal melting range in the DSC spectrum. In fact, EP '734 teaches away from the claimed invention because, in Table 1, the polymer products of Examples 4–7 have a peak melting point which is lower than the peak melting point of the lower melting component. Lastly, the broad molecular weight distribution M_w/M_n of the polymer products of EP '734 does not suggest the narrow molecular weight distribution M_w/M_n of the polyolefin molding compositions of the claimed invention.

Therefore, Applicants submit that claims 6–8, 12 and 15 are not obvious over EP '734 and withdrawal of the rejection under 35 U.S.C. §103 is respectfully requested.

Claims 6–8, 12 and 15 are rejected under 35 U.S.C. §103 as being unpatentable over EP 0 128 046 and WO 90/03414, optionally further taken with EP 0 351 189.

Both EP '046 and WO 90/03414 disclose a catalyst system of two or more different metallocenes for the production of polyolefins. As previously discussed, it has long been known in the art that a mixture of at least two metallocenes will produce polyolefins of different melting points (Specification, page 1, lines 30–32). However, EP '046 and WO 90/03414 are not concerned with the melt behavior of the polymer product. As such, there is no measurement of the melting point of the polymer product or of the polymer components. Accordingly, there is no teaching or suggestion that the melting points of the polymer components *must differ* by at least 5°C. As demonstrated by Table 1 of EP '734, without an express teaching, the difference in melting points of the polymer components of EP '046 and WO 90/03414 could be less than 5°C. Moreover, the molecular weight distribution of the polymer products of WO 90/03414 is broad, i.e., > 3.

Therefore, the references EP '046 and WO 90/03414 by themselves do not disclose or suggest the claimed process for the preparation of a polyolefin molding composition having a narrow molecular weight distribution and a unique melt behavior.

EP '189 discloses the preparation of an ethylene–α–olefin copolymer comprising ethylene and one or more α–olefin. The thermogram of the copolymer as determined by DSC shows an endothermic peak (a) in the range of from 75°–100°C and an endothermic peak (b) in the range of from 120°–140°C. The copolymer is polymerized in the presence of a catalyst system composed of a vanadium compound represented by the formula $VO(OR)_nX_{3-n}$ (page 7, line 29). Thus, EP '189 provides

no teaching or suggestion of a polymerization or copolymerization process which uses a metallocene catalyst system comprised of at least two different metallocene compounds. Accordingly, Applicants respectfully submit that there is no motivation to combine EP '189 with either EP '046 or WO 90/03414, which do require a catalyst system comprising two or more different metallocenes. The system for preparing the copolymer of EP '189 is so technically diverse from the metallocene catalyst systems of EP '046 and WO 90/03414 that, absent hindsight reconstruction of the claimed invention, there is no sound technical reason for the cited combination.

Thus, Applicants respectfully submit that EP '046 and WO 90/03414, whether taken alone or in combination with EP '189, do not render the claimed invention obvious. Accordingly, withdrawal of the rejection of claims 6–8, 12 and 15 under 35 U.S.C. §103 over EP '046 and WO 90/03414, optionally further taken with EP '189, is requested.

CONCLUSION

Applicants submit that the present Amendment is fully responsive to the outstanding Office Action. The Amendment and accompanying Remarks place pending claims 7, 8, 12, 15 and 16 in condition for allowance, which action is earnestly solicited.

PETITION FOR THREE–MONTH EXTENSION OF TIME AND FEE (37 C.F.R. §§1.17(c) & 1.136(a))

Pursuant to 37 C.F.R. §1.136 (a), Applicants petition for an extension of time to respond to the pending Office Action within the third month following the statutory

period for response which expires on February 1, 1995. Please charge Account No. 08-2453 in the amount of $870.00 to cover the extension fee set forth in 37 C.F.R. §1.17(c) for a three-month extension of time. A duplicate of this paper is attached.

Respectfully submitted,

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